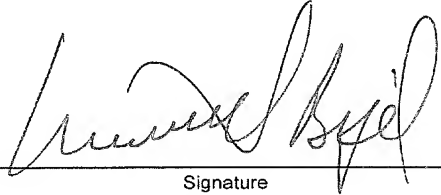


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PRE-APPEAL BRIEF REQUEST FOR REVIEW		Docket Number (Optional)	
		9409-3	
I hereby certify that this correspondence is being transmitted electronically to the U.S. Patent and Trademark Office		Application Number	Filed
on <u>November 8, 2007</u>		10/661,917	09/11/2003
Signature <u>Susan E. Freedman</u>		First Named Inventor	
Typed or printed name <u>Susan E. Freedman</u>		Robert P. Freese	
		Art Unit	Examiner
		1795	Daborah C. Davis
Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.			
This request is being filed with a notice of appeal.			
The review is requested for the reason(s) stated on the attached sheet(s). Note: No more than five (5) pages may be provided.			
I am the			
<input type="checkbox"/>	applicant/inventor.	Signature	
<input type="checkbox"/>	assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)	Mitchell S. Bigel	
<input checked="" type="checkbox"/>	attorney or agent of record. 29,614	Typed or printed name	
	Registration number _____	919-854-1400	
		Telephone number	
<input type="checkbox"/>	attorney or agent acting under 37 CFR 1.34.	November 8, 2007	
	Registration number if acting under 37 CFR 1.34 _____	Date	
NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.			
<input checked="" type="checkbox"/> *Total of <u>1</u> forms are submitted.			

This collection of information is required by 35 U.S.C. 132. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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**RESPONSE UNDER 37 C.F.R. 1.116  
EXPEDITED PROCEDURE  
EXAMINING GROUP 1756**

Attorney Docket No. 9409-3

PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re: Freese et al.

Confirmation No.: 8346

Serial No.: 10/661,917

Examiner: Daborah Chacko Davis

Filed: September 11, 2003

Group Art Unit: 1795

For: METHODS FOR MASTERING MICROSTRUCTURES THROUGH A SUBSTRATE  
USING NEGATIVE PHOTORESIST

November 8, 2007

Commissioner for Patents  
Box 1450  
Alexandria, VA 22313-1450

**REASONS IN SUPPORT OF APPLICANTS' SECOND  
PRE-APPEAL BRIEF REQUEST FOR REVIEW**

Sir:

This document is submitted in support of the Second Pre-Appeal Brief Request for Review filed concurrently with a Second Notice of Appeal in compliance with 37 C.F.R. 41.31 and with the rules set out in the OG of July 12, 2005 for the New Appeal Brief Conference Pilot Program.

Briefly, Applicants filed a first Pre-Appeal Brief Request for Review in view of the final rejection of some of the claims under 35 USC §103(a) based on three references, and others of the claims in view of these three references and two additional references. The Panel Decision from the first Pre-Appeal Brief Review reopened prosecution. A new Official Action has now been issued. However, in the new Official Action, a new second reference has been substituted for the original second reference, with little or no substantive effect. Accordingly, Applicants are filing the present Second Pre-Appeal Brief Request for Review, and request withdrawal of the outstanding rejections by the Pre-Appeal Panel and allowance of the present application.

**REMARKS**

Applicants hereby request a second Pre-Appeal Brief Review (hereinafter "Request") of Claims 1, 3-13 and 15-18 that were rejected in the Official Action mailed October 18, 2007. Claims 1, 3-10 and 15-18 stand rejected under 35 USC §103(a) over U.S. Patent 4,965,118 to Kodera et al. in view of U.S. Patent 6,292,255 to McCullough and U.S. Patent 6,410,213 to Raguin et al. (McCullough has now been substituted for U.S. Patent 5,620,817 to Hsu et al.) Claims 11-13 stand rejected under 35 USC §103(a) over the above three references in further view of U.S. Patent 4,087,300 to Adler and U.S. Patent 5,342,737 to Georger, Jr. et al. Applicants respectfully submit that the Official Action merely alleged that the elements of the independent claims were, independently,

known in the prior art. Yet the United States Supreme Court recently held that "...a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *KSR International Co v. Teleflex Inc., et al.*, 550 U.S. 1, 14 (2007). The Supreme Court also noted a corollary principle that when the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be unobvious. *Id.* at 12. One or more elements needed for a *prima facie* rejection under 35 USC §103(a) is, therefore, simply not present. Therefore, Applicants again respectfully request review of the present application by an Appeal Conference prior to the filing of an Appeal Brief. In the interest of brevity, without waiving the right to argue additional grounds should this Request be denied, Applicants will merely point out the Examiner's omissions of one or more essential elements needed for a *prima facie* rejection.

Independent Claim 1 recites:

1. A method of fabricating an array of microlenses comprising:  
scanning a radiation beam at varying amplitude through a substrate that is transparent thereto into a negative photoresist layer on the substrate to image the array of microlenses in the negative photoresist layer.

Thus, Independent Claim 1 recites a method of fabricating an array of microlenses comprising five interrelated recitations:

- (1) scanning a radiation beam;
- (2) at varying amplitude;
- (3) through a substrate that is transparent thereto;
- (4) into a negative photoresist layer on the substrate;
- (5) to image the array of microlenses in the negative photoresist layer.

The present application, for example at Page 20, line 13-Page 21, line 12, describes various potential advantages in fabricating an array of microlenses using the five interrelated recitations. Applicants will now show that the combination of Kodera et al., McCullough and Raguin et al. does not describe or suggest many of the recitations of independent Claim 1.

In particular, Kodera et al. does not describe or suggest (1) scanning a radiation beam, (2) at varying amplitude (5) to image the array of microlenses in the negative photoresist layer, as recited in Claim 1. Rather, as noted in Kodera et al. Column 6, line 21-41:

#### 1.2 Manufacturing method

Most suitable material constituting respective components will be described while explaining a method of manufacturing the disk 100. First, as shown in FIG. 2, a resin mold 130, on which an uneven pattern 131 having an opposite relationship with respect to the uneven pattern corresponding to information to be recorded is formed, is prepared. A resin liquid 140 of the ultraviolet ray hardening type or the electron ray hardening type is painted on the resin mold 130. From the side of the resin liquid 140, ultraviolet rays or electron rays 150 are irradiated, thus to harden and give form to the resin liquid 140. The hardened resin layer serves as the resin layer 110. After this, the resin layer 110 is

disconnected from the resin mold 130. When needed, ultraviolet rays or electron rays are irradiated for the second time to complete hardening of the resin. Since the resin thus hardened is subjected to three-dimensional bridging hardening, it exhibits a high heat resistance property and high solvent resistance property. (Emphasis added.)

Accordingly, in Koder et al., there is no need to scan a radiation beam at a varying amplitude, because Koder et al.'s flexible optical information recording medium is patterned by molding a resin onto a substrate having a pattern on it, as shown, for example, in Koder et al. Figures 1, 2, 4A and 4B. Rather than scanning, flooding of radiation is used to simply harden the molded resin, as noted in Koder et al. Column 8, lines 33-43. The flooding arrows 150 of Koder et al. Figure 2 and Figure 5 confirm that the scanning is not used and, in fact, there would be no need for scanning in Koder et al. for the reasons described above.

At the top of Page 4, the Official Action concedes:

The difference between the claims and Koder is that Koder does not disclose that the radiation beam amplitude is varied (claims 10, 27, and 42).

Applicants have shown above that Koder et al. fails to disclose far more than varying the amplitude of radiation beam, in that the Koder et al. does not describe or suggest (1) scanning a radiation beam (2) at varying amplitude. Moreover, Koder et al.'s radiation does not (5) image the array of microlenses as recited in Claim 1. Rather, the radiation beam is merely used to harden the resin layer, but the array of microstructures is already formed mechanically by molding onto a patterned supporting layer.

In fact, Koder et al. does not even appear to use photoresist, because Koder et al.'s "resin liquid" does not appear to be capable of producing an image-wise pattern, and is not subjected to a development process. Rather, the resin liquid is simply hardened by irradiation of ultraviolet rays or electron rays, as described in the above-quoted passages of Koder et al. Accordingly, Koder et al. would appear to be incapable of imaging an array of microlenses, even if a radiation beam was scanned at varying amplitude.

In an attempt to supply the missing teachings, the Official Action now cites McCullough. However, McCullough relates to a method and apparatus for varying the exposure dose during semiconductor integrated circuit manufacturing as a function of distance in a scan direction, to compensate for the signature of the photolithographic device and thereby reduce line width variation in the scan direction. Note the McCullough Abstract:

In a scanning photolithographic device used in the manufacture of semiconductors, a method and apparatus for varying the exposure dose as a function of distance in the scan direction compensating for the signature of the photolithographic device for reducing linewidth variation in the scan direction. The linewidth in the scan direction may vary for a particular device or tool for a variety of reasons. This variation or signature is used in combination with a photosensitive resist response

function to vary the exposure dose as a function of distance in a scan direction, substantially reducing the linewidth variation. A dose control varies the exposure dose as a function of distance in a scan direction to correct linewidth variations caused by characteristics of the photolithographic system. Linewidth variations as a function of distance in the direction of scan are substantially reduced, resulting in more consistent and improved feature or element sizes. (Emphasis added.)

Accordingly, McCullough relates to conventional semiconductor fabrication in which variations of linewidths are reduced by compensating the dose in exposing a photoresist. In fact, McCullough is designed to provide uniform linewidths by varying exposure dose, so that McCullough teaches away from (2) varying amplitude of a radiation beam to (5) image the array of microlenses, as recited in Claim 1. This is reinforced by the other cited passages of McCullough, such as Column 2, lines 29-31, and Column 6, lines 1-17.

The Official Action concedes in the middle of Page 4 that:

The difference between the claims and Koderä in view of McCullough is that Koderä in view of McCullough does not disclose that the optical microstructures formed are an array of microlenses and that the microstructure master is a microlens array master.

Applicants have shown above that Koderä et al. in view of McCullough fails to disclose much more than this. Nonetheless, in an attempt to supply the missing teachings, the Official Action again cites Raguin et al. However, Raguin et al. clearly describes the use of positive photoresist, and clearly illustrates at Figure 8 that imaging through the substrate does not take place. Moreover, Raguin et al. describes at Figures 8(a) and 8(b) the imaging through a mask 84.

In summary, the Official Action appears to erroneously interpret the primary reference. In particular, Koderä et al. provides flooding and uses mechanical molding to form various microstructures. Light is merely used to flood the layer to enable it to be hardened and cured. Moreover, the new secondary reference McCullough teaches controlling an exposure dose as a function of distance in a scan direction to compensate for the signature of a photolithographic device, to thereby reduce linewidth variation in a semiconductor device and, accordingly, teaches away from varying the amplitude of the scanned radiation beam in order to image an array of microlenses. Accordingly, the primary and secondary references both teach away from combining certain known elements, so that discovery of a successful means of combining them by Applicants is more likely to be unobvious, as recently held by the U.S. Supreme Court. Moreover, although Raguin et al. illustrates forming an array of microlenses, Raguin et al. does not appear to provide any exposure through the substrate by scanning a radiation beam at varying amplitudes through a substrate into a negative photoresist layer on the substrate.

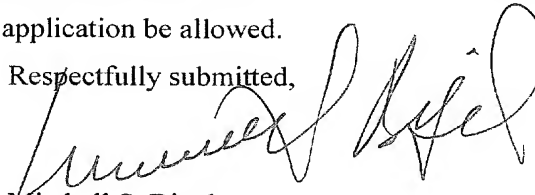
Applicants have discovered a unique method of fabricating an array of microlenses. The claimed invention can provide unique advantages, as was described throughout the specification. The

new rejection continues to selectively pick and choose various features from different patents, despite their teachings, and teachings away, in an unsuccessful attempt to reconstruct the claimed invention. Stated differently, the rejection attempts to show that the various elements of the claims were, independently, known in the prior art. Yet, the U.S. Supreme Court recently held that a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. *Id.* at 14. For at least these reasons, Applicants respectfully request withdrawal of the rejection of independent Claim 1.

Finally, Applicants provided extensive argument why many of the dependent claims are separately patentable. Should the Pre-Appeal Brief Review not find Claim 1 to be patentable, Applicants respectfully request the Pre-Appeal Brief Review to consider Applicants remarks at Pages 9-10 of Applicants' Amendment After Final Action of May 22, 2007. This analysis will not be repeated for the sake of brevity.

The first Pre-Appeal Brief Review resulted in withdrawal of the outstanding rejections and reopening prosecution. Applicants expected to receive a Notice of Allowance if significant new art was not found. Instead, another rejection was made using a new secondary reference that merely shows that it was known to vary the exposure dose in a semiconductor integrated circuit lithography system to compensate for linewidth variations. Thus, the results of the reopened prosecution appear to be another demonstration that each of the elements of the claim was, independently, known in the prior art, without proving that it would be obvious to combine these diverse elements in a manner not contemplated by the cited art, so that one or more elements needed for a *prima facie* rejection under 35 USC § 103(a) are simply not present. Therefore, Applicants respectfully request a second Pre-Appeal Brief Review of the present application, that the rejections be reversed by the Pre-Appeal Brief Review Panel and that the present application be allowed.

Respectfully submitted,

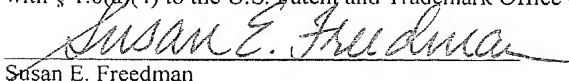


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**CERTIFICATION OF TRANSMISSION**

I hereby certify that this correspondence is being transmitted via the Office electronic filing system in accordance with § 1.6(a)(4) to the U.S. Patent and Trademark Office on November 8, 2007.



Susan E. Freedman

Date of Signature: November 8, 2007